





































Layer	Calc Thickness	Primary Stack	Description	Dk / Df
Layer - 1	0.0010 0.0020		Taiyo 4000-BN 1/2oz Mix (Std Plt)	3.90 / 0.0270
	0.0049		370H	3.79 / 0.0247
Layer - 2	0.0006		1/2oz Mix	
	0.0040		370H	4.10 / 0.0201
Layer - 3	0.0012		1oz P/G	
	0.0052		370H	3.87 / 0.0236
Layer - 4	0.0006		1/2oz Mix	
	0.0050		370H	4.24 / 0.0210
Layer - 5	0.0012		1oz P/G	
	0.0118		370H	4.01 / 0.0216
Layer - 6	0.0012		1oz P/G	
	0.0050		370H	4.24 / 0.0210
Layer - 7	0.0006		1/2oz Mix	
	0.0052		370H	3.87 / 0.0236
Layer - 8	0.0012		1oz P/G	
	0.0040		370H	4.10 / 0.0201
Layer - 9	0.0006		1/2oz Mix	
	0.0049		370H	3.79 / 0.0247
Layer - 10	0.0020 0.0010		1/2oz Mix (Std Plt) Taiyo 4000-BN	3.90 / 0.0270




















Materials: Isola 370H High-Tg FR4
















Requirement	Req. Thickness	Tol +	Tol -	Calc Thick
Incl. Plating & Mask	0.0630	0.0063	0.0063	0.0632
Incl. Mask over Laminate	0.0590	0.0059	0.0059	0.0592
Incl. Plating	0.0610	0.0061	0.0061	0.0612
After Lamination	0.0582	0.0029	0.0029	0.0584
Over Laminate	0.0570	0.0057	0.0057	0.0572

Note

IPC-6012 has a minimum dielectric requirement of .003543" and any nominal dielectric .0045" or less may violate this requirement based on vendor tolerances and actual lamination yields. Accepting TTM's stackup will be taken as a waiver against this requirement. With this exception, minimum dielectric thickness shall be .000984". If this is not acceptable please advise immediately so options can be reviewed and discussed. If we do not get a response within 24 hours, we will proceed with this stackup. Please also be advised that accepting this stackup has no impact on TTM meeting IPC-6012 Class 2 or Class 3 requirements. Please also note that nominal targeted dielectric gaps of .0046" or greater shall have a minimum tolerance of +/- .001" after lamination.

Impedance Type	Layer	Design	Actual	Pitch	Plane	Target	Tol (ohms)	Predict
 Surface MS	L1	-	0.0170	-	-	50	5.0	49.71
	-	-	-	-	L3			
 Surface MS	L1	-	0.0250	-	-	40	4.0	39.79
	-	-	-	-	L3			
 Surface MS	L1	-	0.0340	-	-	33	3.3	32.64
	-	-	-	-	L3			
 Surface MS	L1	-	0.0095	-	-	66	6.6	65.41
	-	-	-	-	L3			
 EC Microstrip	L1	-	0.0060	0.0110	-	100	10.0	99.15
	-	-	0.0060	-	L3			
 EC Microstrip	L1	-	0.0090	0.0140	-	90	9.0	88.96
	-	-	0.0090	-	L3			
 EC Microstrip	L1	-	0.0105	0.0155	-	85	8.5	85.03
	-	-	0.0105	-	L3			
 EC Microstrip	L1	-	0.0130	0.0180	-	80	8.0	79.12
	-	-	0.0130	-	L3			
 Surface MS	L1	-	0.0080	-	-	50	5.0	49.93
	-	-	-	-	L2			
 EC Microstrip	L1	-	0.0062	0.0120	-	90	9.0	89.40
	-	-	0.0062	-	L2			
 EC Microstrip	L1	-	0.0048	0.0110	-	100	10.0	99.10
	-	-	0.0048	-	L2			
 Stripline	L2	-	0.0062	-	L1	40	4.0	39.10
	-	-	-	-	L3			
 Stripline	L2	-	0.0035	-	L1	66	6.6	53.17
	-	-	-	-	L3			
Comment: Can't achieve 66ohm								
 EC Stripline	L2	-	0.0055	0.0110	L1	80	8.0	79.45
	-	-	0.0055	-	L3			
 EC Stripline	L2	-	0.0035	0.0165	L1	132	13.2	105.79
	-	-	0.0035	-	L3			
Comment: Can't achieve 132ohms								
 EC Stripline	L2	-	0.0039	0.0130	L1	100	10.0	99.03
	-	-	0.0039	-	L3			
 EC Stripline	L2	-	0.0045	0.0100	L1	90	9.0	88.25
	-	-	0.0045	-	L3			

Impedance Type	Layer	Design	Actual	Pitch	Plane	Target	Tol (ohms)	Predict
18  EC Stripline	L2	-	0.0050	0.0110	L1	85	8.5	84.41
	-	-	0.0050	-	L3			
19  Stripline	L2	-	0.0040	-	L1	50	5.0	49.81
	-	-	-	-	L3			
20  Stripline	L4	-	0.0070	-	L3	40	4.0	39.41
	-	-	-	-	L5			
21  Stripline	L4	-	0.0090	-	L3	33	3.3	33.64
	-	-	-	-	L5			
22  EC Stripline	L4	-	0.0065	0.0130	L3	80	8.0	78.33
	-	-	0.0065	-	L5			
23  EC Stripline	L4	-	0.0039	0.0100	L3	100	10.0	100.15
	-	-	0.0039	-	L5			
24  EC Stripline	L4	-	0.0050	0.0120	L3	90	9.0	90.62
	-	-	0.0050	-	L5			
25  EC Stripline	L4	-	0.0057	0.0125	L3	85	8.5	84.49
	-	-	0.0057	-	L5			
26  EC Stripline	L4	-	0.0082	0.0130	L3	66	6.6	66.10
	-	-	0.0082	-	L5			
27  Stripline	L4	-	0.0045	-	L3	50	5.0	50.24
	-	-	-	-	L5			
28  Stripline	L7	-	0.0070	-	L6	40	4.0	39.41
	-	-	-	-	L8			
29  Stripline	L7	-	0.0090	-	L6	33	3.3	33.64
	-	-	-	-	L8			
30  EC Stripline	L7	-	0.0065	0.0130	L6	80	8.0	78.33
	-	-	0.0065	-	L8			
31  EC Stripline	L7	-	0.0039	0.0100	L6	100	10.0	100.15
	-	-	0.0039	-	L8			
32  EC Stripline	L7	-	0.0050	0.0120	L6	90	9.0	90.62
	-	-	0.0050	-	L8			
33  EC Stripline	L7	-	0.0057	0.0125	L6	85	8.5	84.49
	-	-	0.0057	-	L8			
34  EC Stripline	L7	-	0.0082	0.0130	L6	66	6.6	66.10
	-	-	0.0082	-	L8			
35  Stripline	L7	-	0.0045	-	L6	50	5.0	50.24
	-	-	-	-	L8			
36  Stripline	L9	-	0.0062	-	L8	40	4.0	39.10
	-	-	-	-	L10			

Impedance Type	Layer	Design	Actual	Pitch	Plane	Target	Tol (ohms)	Predict
37  Stripline	L9	-	0.0035	-	L8	66	6.6	53.17
	-	-	-	-	L10			
Comment: Can't achieve 66ohm								
38  EC Stripline	L9	-	0.0055	0.0110	L8	80	8.0	79.45
	-	-	0.0055	-	L10			
39  EC Stripline	L9	-	0.0035	0.0165	L8	132	13.2	105.79
	-	-	0.0035	-	L10			
Comment: Can't achieve 132ohms								
40  EC Stripline	L9	-	0.0039	0.0130	L8	100	10.0	99.03
	-	-	0.0039	-	L10			
41  EC Stripline	L9	-	0.0045	0.0100	L8	90	9.0	88.25
	-	-	0.0045	-	L10			
42  EC Stripline	L9	-	0.0050	0.0110	L8	85	8.5	84.41
	-	-	0.0050	-	L10			
43  Stripline	L9	-	0.0040	-	L8	50	5.0	49.81
	-	-	-	-	L10			
44  Surface MS	L10	-	0.0250	-	L8	40	4.0	39.79
	-	-	-	-	-			
45  Surface MS	L10	-	0.0340	-	L8	33	3.3	32.64
	-	-	-	-	-			
46  Surface MS	L10	-	0.0095	-	L8	66	6.6	65.41
	-	-	-	-	-			
47  EC Microstrip	L10	-	0.0105	0.0155	L8	85	8.5	85.03
	-	-	0.0105	-	-			
48  EC Microstrip	L10	-	0.0130	0.0180	L8	80	8.0	79.12
	-	-	0.0130	-	-			
49  Surface MS	L10	-	0.0080	-	L9	50	5.0	49.93
	-	-	-	-	-			
50  EC Microstrip	L10	-	0.0062	0.0120	L9	90	9.0	89.40
	-	-	0.0062	-	-			
51  EC Microstrip	L10	-	0.0048	0.0110	L9	100	10.0	99.10
	-	-	0.0048	-	-			

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